PROCEEDINGS OF THE CLUB

Meeting of March 17, 1937

President Barnhart called the meeting to order at 3:30 P.M. at the New York Botanical Garden. Twenty persons were present. The minutes of the last two meetings were read and accepted.

The resignations of Dr. Kingo Miyabe, Hokkaido Imperial University, Sapporo, Japan, and of Dr. Vladimir A. Shternov, New York City, were accepted with regret. The recording secretary reported that a letter of resignation had been received from Mr. Arthur Norton, and that Miss Eleanor A. Friend wished to resign from annual membership and apply for associate membership.

The applications of Mr. Lyman Benson, Mr. Cyril O. Bratley, Dr. W. R. Ivimey-Cook, and Mrs. Frank G. Ruggles for annual membership were read.

In view of the fact that the club has at present no honorary members, Dr. Moldenke proposed that Miss Gulielma Lister of Leytonstone, Sussex, England, be considered for this honor. He stated that Miss Lister is a "member of a family of naturalists and scientists, world renowned as an expert on the Myxomycetes. She is the niece of the great Joseph, Lord Lister, and daughter of the famous Arthur Lister. She is one of the last of that fast-disappearing class of all-around naturalists which reached its most splendid culmination in Charles Darwin, whose student and friend she was."

The recording secretary read a letter from Miss Gertrude D. Howe, daughter of Dr. Marshall Avery Howe, acknowledging the club's appreciation of her father. A letter was received from Prof. William L. Bray of Syracuse University thanking the club for his election to Honorary Life Membership.

Dr. Fulling proposed that the afternoon meetings of the club be held at 3:00 P.M. rather than at 3:30. There was some discussion of this proposal but no action was taken.

For the scientific program, Dr. Ralph H. Cheney of the Biology Department of Long Island University gave a very comprehensive talk on the "Morphology and Chemistry of the

Coffee Fruit in Relation to Beverage Quality and Effects." The quality of the beverage is dependent upon fruit size, seed size, and the altitude at which the coffee trees are grown. A height of about 5 meters and a fruit size of .8–.9 cm. are necessary conditions for the production of the best coffee. Coffee seeds of a fine hard structure containing from 1–2% caffein are also best. *Coffea arabica* has been found to possess the greatest number of desirable qualities and is very widely cultivated, the production areas of coffee in general following the equator.

Dr. Cheney then showed some very interest charts demonstrating the effect of coffee and caffein on various physiological processes of animals and man. It was shown that the stimulatory effect of coffee is not entirely due to caffein.

D. Elizabeth Marcy
Recording Secretary

Meeting of April 6, 1937

The meeting, at the Museum of Natural History, was called to order at 8:15 p.m. by President Barnhart. Forty five persons were present.

Dr. John W. Shive, Plant Physiologist at the New Jersey Agricultural Experiment Station, was the speaker of the evening, and the subject of his address, "Cryptotrophic Nutrition of Plants." Dr. Shive stated that he preferred the word "trace element" to "cryptotrophic" and explained that, although very small doses of certain elements were necessary for nutrition, the importance of these elements was in no sense minor. Many so-called "physiological diseases" are due to a lack of one or another of them. His first slide showed the characteristic symptoms of deficiencies of potassium, calcium, boron, magnesium, iron, manganese, and phosphorus.

The effects of boron deficiency were discussed in detail. Deficiency symptoms appear one week to ten days after the boron has been omitted from the culture solution. The chief injury is to the meristematic tissues. The entire growing tip is killed and further growth prevented. If boron is then supplied, new shoots may start from the base of the plant. The leaves of boron deficient plants have a wrinkled appearance and characteristic breaks or cracks in the midrib. The disease "cracked

stem" in celery has been demonstrated to be due to boron deficiency.

Microscopic examination of boron deficient plants indicates that the meristematic cells enlarge, become more acid, and finally explode. This disintegration follows back through the cambium and finally affects all of the vascular tissues. Chemical analysis shows that there is an accumulation of ammonia in boron deficient plants. The percentage of soluble nitrogen compounds is greater in boron deficient than in normal plants, but the percentage of protein nitrogen less.

One-half part per million of boron is enough to satisfy the nutritive requirements of the dicotyledonous plants tested and five parts per million is definitely toxic. However, the boron requirements of various kinds of plants differ. The monocotyledons in general seem to have a very low boron requirement, cotton requiring twice as much boron as corn. Experiments have shown that plants are not able to store boron.

D. Elizabeth Marcy
Recording Secretary

Meeting of April 21, 1937

The meeting was called to order by President Barnhart at the Brooklyn Botanic Garden at 3:30 p.m. Eighteen persons were present.

The minutes of the last two meetings were read and approved. The recording secretary stated that she had received the application of Mr. Edgar B. Harger for annual membership, and the applications of Mrs. Robert C. Hill, Miss Marion K. Ober, and Mrs. Stephen R. Smith for associate membership. It was reported that letters of resignation had been received from Mr. C. M. Roberts and Mr. Rodney B. Miller.

In response to the Club's petition that the area proposed for Mt. Olympus National Park not be reduced, a letter was received from Mr. Arno B. Cammerer of the Department of the Interior. He stated that the bill for the proposed park had been defeated but that a new bill (H.R. 4724) has been introduced which provides for a much smaller park area but with adequate examples of the primeval forest of the Olympic Peninsula.

"Inheritance studies on disease resistance in sorghum" were discussed by Dr. Elizabeth Marcy of the Brooklyn Botanic

Garden. In recent years sorghums have become an important crop in this country, particularly in the southwest, because of their ability to withstand drought conditions. There are three important sorghum diseases: the head smut, *Sorosporium reilianum*, the covered kernel smut, *Sphacelotheca sorghi*, and the loose kernel smut, *Sphacelotheca cruenta*. Infection usually takes place in the early seedling stage, but spores are not formed until the plant is mature. External environal conditions during the germination period have a pronounced influence upon the percentage of smutted plants. Environal conditions very favorable for the infection of susceptible varieties failed to cause infection of the resistant milo varieties, but caused certain pathological symptoms of infection in the resistant variety, Feterita.

When the reaction of the hybrids to the covered smut was determined it was found that a clear-cut 3:1 ratio of resistant to susceptible F_2 plants was obtained in crosses between milo and susceptible varieties. When Feterita was crossed with susceptible varieties there were indications of the interaction of two factors, a 13:3 ratio of susceptible to resistant F_2 plants being obtained. Crosses between milo and Feterita showed that they possessed different factors for resistance.

Reaction of these hybrids to the loose smut was quite different, susceptibility being dominant in the milo hybrids, and resistance dominant in the Feterita hybrids.

D. Elizabeth Marcy
Recording Secretary

Meeting of May 4, 1937

The meeting was called to order at 8:15 p.m. at the American Museum of Natural History, President Barnhart presiding. There were fifty members and friends present.

Dr. George C. Wood, 4430 Tibbett Ave., Riverdale-on-Hudson, New York City was elected an annual member.

The following were elected associates: Mr. Leon W. Bowen, 77 Evergreen Ave., Bloomfield, N.J.; Mr. John A. Crabtree, Montgomery, N.Y.; Miss Clara Raska, 21-14 149 St., Whitestone, L.I., N.Y.

Also those whose applications for membership were reported at the meetings of March 17 and April 21 were elected.

Professor A. W. Evans of Yale University, a member of the

club since 1896, was unanimously elected to Honorary Life Membership.

The resignations of the following from annual membership were accepted with regret: Mr. Leon W. Bowen, Bloomfield, N.J.; Miss Eleanor A. Friend, N.Y. City.; Mr. R. B. Miller, Newark, N.J.; Mr. Arthur Norton, Portland, Me.; Mr. C. M. Roberts, Fairmont State Teachers' College, Fairmont, W.Va.

Dr. A. B. Stout of the New York Botanical Garden was the speaker of the evening. His discussion of "Incompatibilities in Flowering Plants" was amply illustrated with carefully worked out charts. Dr. Stout stated that the term incompatibility, as he uses it, applies to plants within a species and results from too great similarity in genetic makeup, in contrast to hybridization incompatibility which results from too great dissimilarity in genetic makeup.

Plants within a species may be self incompatible and cross compatible or vice versa, with many gradations in between. By making a large number of crosses, he showed how it has been possible to divide species into separate lines or strains on the basis of the cross compatability within the group. He outlined studies on Veronica where only four such lines have been found to be present, and studies on petunia where a larger number of lines have been discovered, and between which the compatability relationships are much more complex.

In closing he mentioned the economic importance of this type of investigation, and showed the results of testing the compatability relations of a large number of fruit trees.

D. Elizabeth Marcy
Recording Secretary